

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference Case E-2261/04 | | FOR FURTHER ACTION | | See Form PCT/IPEA/416 |
| International application No. PCT/IB2004/002219 | | International filing date (day/month/year) 06.07.2004 | Priority date (day/month/year) 09.07.2003 | |
| International Patent Classification (IPC) or national classification and IPC F04B35/00, F03G7/08 | | | | |
| Applicant ERRIU, Fernando | | | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 4 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> | | | | |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p> | | | | |
| Date of submission of the demand 09.05.2005 | | Date of completion of this report 21.10.2005 | | |
| Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | | Authorized Officer Ingelbrecht, P Telephone No. +31 70 340-2256  | | |

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2004/002219

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-14 as originally filed

Claims, Numbers

1-15 received on 09.05.2005 with letter of 09.05.2005

Drawings, Sheets

1/7-7/7 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2004/002219

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 4-15 |
| | No: Claims | 1-3 |
| Inventive step (IS) | Yes: Claims | 4-15 |
| | No: Claims | 1-3 |
| Industrial applicability (IA) | Yes: Claims | 1-15 |
| | No: Claims | |

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D9: US-A-4 409 489 (HAYES) 11 October 1983 (1983-10-11)

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
 - 2.1 The document D9 discloses (the references in parentheses applying to this document, figures 1-3): a fluid device for recovery of the kinetic energy of vehicles, comprising an intake pipe (131), a delivery pipe (121), and a pumping unit (140,141,142), which is connected to said intake pipe and to said delivery pipe for sending fluid under pressure from said intake pipe to said delivery pipe, at least one actuating element (200), which is set along a road or railway course of a road or railway infrastructure for land vehicles, is connected to said pumping unit and can move between a position of unloading and a position of loading, in which said at least one actuating element (200) is adapted to be surmounted by a vehicle (B) travelling along said road or railroad course, wherein said actuating element is elastically deformable and has a contact surface in contact with said vehicles and substantially aligned to said road or railroad course.
3. Document D9 further discloses all the features of claims 2 and 3 which therefore also do not fulfill the requirements of Article 33(1) PCT
4. The combination of the features of dependent claim 4 is neither known from, nor rendered obvious by, the available prior art, and therefore claim 4 fulfills the requirements of Articles 33(1),(2) and (3) PCT.
5. Claims 5-15 are considered dependent on claim 4 and as such also meet the requirements of the PCT with respect to novelty, inventive step and industrial applicability.

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Fernando ERRIU

C l a i m s

1. A fluid device (1; 20; 40; 50; 60; 70; 80; 90;
5 90'; 90'') for recovery of the kinetic energy of
vehicles, comprising an intake pipe (13), a delivery
pipe (15), and a pumping unit (7; 22), which is
connected to said intake pipe (13) and to said
10 delivery pipe (15) for sending fluid under pressure
from said intake pipe (13) to said delivery pipe
(15), at least one actuating element (5; 22; 44; 52;
62; 76; 108), which is set along a road or railway
course (3; 75) of a road or railway infrastructure
(3a; 71) for land vehicles, is connected to said
15 pumping unit (7; 22) and can move between a position
of unloading and a position of loading, in which said
at least one actuating element (5; 22; 44; 52; 62;
76; 108) is adapted to be surmounted by a vehicle
travelling along said road or railroad course (3;
20 75), said device being characterized in that said
actuating element (22; 76; 108) is elastically
deformable and has a contact surface (26) in contact
with said vehicles and substantially aligned to said
road or railroad course (3; 75).
- 25 2. The device according to Claim 1, characterized in
that said surface of contact (26) is substantially
plane, and in that said actuating element (22; 76;
108) comprises end portions (27) longitudinally set
opposite to one another and rigidly connected to said
30 road or railroad course (3; 75).
3. The device according to Claim 2, characterized in

that said actuating element (22) comprises a membrane, and defines, at the top, a first variable-volume chamber (23) connected to said intake line (13) and said delivery line (15).

4. The device according to Claim 3, characterized in that it comprises a honeycomb structure (103) for pumping connected to said intake line (13) and said delivery line (15), which defines a multiplicity of second variable-volume chambers (109) delimited, at the bottom, by a supporting wall (100, 110) and co-operating, at the top, with said actuating element (22).

5. The device according to Claims 3 and 4, characterized in that said honeycomb structure (103) is set inside said first chamber (23), and in that each of said second variable-volume chambers (109) is delimited by rigid side walls (107), which come out of said supporting wall (100) and, at the top, from a deformable head membrane (108) connected in a fluid-tight way to said side walls (107) and co-operating with said actuating element (22).

6. The device according to Claim 5, characterized in that said second variable-volume chambers (109) are delimited at the sides by a multiplicity of rigid separating walls (111), which are hinged to said actuation element (22) and to the supporting wall (110).

7. The device according to any one of the preceding claims, characterized in that said device is supported, at the bottom, by a base (101), which has a plurality of intake tanks or chambers (102) that

are fluid-connected to one another by said intake line (13).

8. The device according to any one of the preceding claims, characterized in that it comprises an elastic element (24; 73), which co-operates with said actuating element (22; 76) and is designed to re-establish said unloading position.

9. The device according to any one of Claims 1 to 8, characterized in that said road infrastructure (3a) is a street.

9. The device according to any one of claims 3 to 8, characterized in that said road infrastructure (71) is a railroad line comprising sleepers (74), in that said road course (75) comprises tracks, in that said actuating element (76) comprises rails and in that said membrane (22) functionally cooperates with said rails.

10. The device according to any one of Claims 1 or 2, characterized in that said road infrastructure (71) is a railroad, comprising a bed (73) and a multiplicity of sleepers (74) supported by said bed (73); in that said actuating element (76) comprises rails connected to said sleepers (74) and in that said pumping unit (7) is functionally connected to at least one of said sleepers (74).

11. The device according to Claim 10, characterized in that it comprises an oscillating actuating member (62) connected to one of said sleepers (74) and said pumping unit (7).

12. The device according to any one of the preceding

claims, characterized in that it comprises a unit for generation of electric power (17, 18) connected to said delivery line (15).

13. The device according to any one of the preceding
5 claims, characterized in that said fluid is hydraulic.

14. The device according to any one of the preceding claims, characterized in that said fluid follows a closed circuit (150).

10 15. The device according to any one of the preceding claims, characterized in that it comprises rigid elements (105, 107a) disposed below said actuating element (5; 22; 44; 52; 62; 76; 108) and supporting said actuating element (5; 22; 44; 52; 62; 76; 108)
15 in said loading position.